

REMARKS

Claims 1-19 are pending. By this Amendment, the title is amended, and claims 1, 6, 12-14 and 18 are amended. Reconsideration based on the above amendments and following remarks is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

Applicants gratefully acknowledge that the Office Action indicates that claims 17-19 include allowable subject matter.

I. THE SPECIFICATION SATISFIES ALL FORMAL REQUIREMENTS

The Office Action objects to the title as not being descriptive. The title has been amended to obviate the objection. Withdrawal of the objection to the specification is respectfully requested.

II. CLAIM 6 SATISFIES THE REQUIREMENTS OF 35 U.S.C. §112, SECOND PARAGRAPH

The Office Action rejects claim 6 under 35 U.S.C. §112, second paragraph. Claim 6 has been amended to obviate this rejection. Withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

III. THE CLAIMS DEFINE ALLOWABLE SUBJECT MATTER

The Office Action rejects claims 9 and 11-15 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,099,343 to Margerum et al. (hereinafter "Margerum") in view of U.S. Patent No. 5,240,636 to Doane (hereinafter "Doane"); rejects claims 9 and 11-15 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,708,487 to Bergman (hereinafter "Bergman") in view of Doane; rejects claims 1-5, 7-8, 10 and 16 under 35 U.S.C. §103(a) as unpatentable over Bergman in view of Doane and further in view of U.S. Patent No. 5,711,589 to Oe et al. (hereinafter "Oe"); and rejects claims 1-2, 7-8 and 10 under

35 U.S.C. §103(a) as unpatentable over Margerum in view of Doane, and further in view of Oe. These rejections are respectfully traversed.

A. Claims 9-16

Neither Margerum nor Bergman, in combination with Doane, disclose, teach or suggest an LCD illuminating device comprising, *inter alia*, a light guide member that guides light from the light source to the display panel, the light guide member comprising a light guiding section, an emitting section and a reflecting section, arranged such that the light generated at the light source is guided in a direction orthogonal to the display panel, reflected by the reflecting section, and then emitted from the emitting section to an irradiated part of the display panel.

The Office Action asserts that "[L]acking form [sic] the disclosure is the diffusing in the on state and transparent in the off state". However, the Office Action's interpretation of the claimed invention with regard to the cited art is incorrect. In the claimed invention, as claimed in claim 9, the liquid crystal layer is switched between a diffusing state and a transparent state. Unlike the Office Action's assertion, claim 9 does not recite that the liquid crystal layer is switched in the on state or the off state.

In the claimed invention, the light generated from the light source is bent at the reflecting section so that the LCD illuminating device can be minimized in a direction along which the light is incident to the display panel.

Thus, Applicants respectfully submit that neither Margerum nor Bergman disclose, teach or suggest the light guide member comprising the light guiding section, the emitting section and the reflecting section, as claimed in independent claim 9.

Further, regarding claim 12, neither Margerum-Doane nor Bergman-Doane combination disclose, teach or suggest a display panel having electrodes provided at an end portion of the display panel which is substantially parallel to the irradiated part.

In contrast to the claimed invention, Bergman, in Fig. 1, discloses a display device having electrodes positioned on a first substrate 6. As shown in Fig. 1, in Bergman, the electrodes are not provided an end portion of the display panel which is substantially parallel to the irradiated part. In addition, the electrodes taught in Bergman are connected to locally apply electric field to a PDLC layer, while the electrodes in claim 9 are connected with a circuit substrate to control the diffusing state and the transparent state of the display segments on the display panel.

Further, the Office Action, at page 4, asserts that "light passing through the electrodes will be somewhat absorbed, and therefore would be restricted". However, claim 9 does not recite the restriction of a light amount. Claim 9 recites a substantial range of emission of light from the emitting section of the light guide member, and it has no connection with the restriction of the light amount.

For these reasons, Applicants respectfully submit that independent claim 9 is distinguishable over the applied art.

Claims 10, 11 and 13-16, which depend from claim 9, are likewise distinguishable over the applied art for at least the reasons discussed as well as for additional features they recite. Withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

B. Claims 1-8

Neither Bergman nor Margerum, alone or in combination with Doane, disclose, teach or suggest an LCD illuminating device comprising, *inter alia*, a light guide member having a reflecting surface formed at least partially in a parabolic shape, and a parabolic arc extending substantially in a longitudinal direction of an end surface of the display panel, as claimed in independent claim 1.

In the claimed invention, the light emitted from the light source and reflected at the reflecting surface illuminates the display panel uniformly, in particular, in a longitudinal direction of the end surface of the display panel.

In contrast, in Oe, a parabolic reflector is conventionally employed with a linear lamp, making it possible to illuminate a display panel uniformly in a direction perpendicular to the display panel.

In the present invention, by forming a parabolic reflecting surface, as claimed in claim 1, the display panel can be illuminated in a uniform manner even if a point light source, such as a single LED is employed.

For these reasons, Applicants respectfully submit that independent claim 1 is distinguishable over the applied art.

Claims 2-5 and 7-8, which depend from claim 1, are likewise distinguishable over the applied art for at least the reasons discussed as well as for additional features they recite. Withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

IV. CONCLUSION

For at least the reasons discussed above, it is respectfully submitted that this application is in condition for allowance.

Should the Examiner believe that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



Mario A. Costantino
Registration No. 33,565

George P. Simion
Registration No. 47,089

MAC:GPS/djb

Attachment:
Appendix

Date: September 16, 2002

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
--

APPENDIX

Changes to Title:

The following is a marked-up version of the amended title:

~~LCD~~ LIQUID CRYSTAL DISPLAY ILLUMINATING DEVICE FOR CAMERA FINDER

Changes to Claims:

The following is a marked-up version of the amended claims:

1. (Amended) An LCD illuminating device comprising:

a display panel enclosing liquid crystal layer capable of switching between a diffusing state where light is diffused and a transparent state where light is transmitted, with a plurality of display segments;

a selection unit that selects at least one display segment of the plurality of display segments of said display panel;

a drive circuit that drives a display segment selected by said selection unit into said diffusing state and unselected display segments into said transparent state;

a light source having a light emitting section that generates light for illuminating said display panel; and

a light guide device having at least one light guide member that guides light from said light source to said display panel, wherein:

said light guide member has a reflecting surface formed at least partially in a parabolic shape, a parabolic arc of said reflecting surface extending substantially in a longitudinal direction of an end surface of said display panel with the light reflected from said reflecting surface entering said end surface, and

said light emitting section of said light source is located substantially at focal point of the parabolic reflecting surface.

6. (Amended) The LCD illuminating device according to claim 2, wherein:

at least two of said light guide member are provided and at least two of said light guide member are located adjacent to either end surface of said transparent substrates, with a thickness of one of said light guide members being substantially the same as a thickness of one of said transparent substrates and a thickness of the other of said light guide members being substantially the same as the sum of a thicknesses of said two transparent substrates.

12. (Amended) The LCD illuminating device according to claim 9, wherein:

said display panel is provided with electrodes at an end portion of said display panel which is substantially parallel to said irradiated part;

said electrodes are connected via a conducting member with a circuit substrate connecting to said drive circuit so as to control said diffusing state and said transparent state of said display segments; and

a substantial range of emission of light from said emitting section of said light guide member is restricted by said conducting member.

13. (Amended) The LCD illuminating device according to claim 9, wherein:

said display panel includes a transparent substrate parallel to an optical axis of a lens for optically forming an image on said display panel, and

light emitted from said emitting section of said light guide member is incident onto said irradiated part which is located at an end surface of said transparent substrate.

14. (Amended) The LCD illuminating device according to claim 9, wherein:

said display panel includes a transparent substrate parallel to an optical axis of a lens for optically forming an image on said display panel, and

said light guide member is located in the vicinity of an end surface of said transparent substrate.

18. (Amended) The LCD illuminating device according to claim 12, wherein:

_____ said light guide member is provided adjacent to either end portion of said display panel.

a thickness of said emitting section of one of said light guide member is substantially the same as a thickness of an end portion of said display panel at which no electrodes are provided, and

said LCD illuminating device further comprising:

a polarizing plate inserted between said display panel and said light guide member with the thickness of said emitting section being substantially the same as the thickness of said end portion of said display panel provided with no electrodes.